

Feasibility Study: LDCT Lung Health Check in Switzerland

Christophe von Garnier (CHUV), Cornel Kaufmann (Interface), Milo Puhan (UZH), Thomas Frauenfelder (USZ)

The relevance of Lung Cancer in Switzerland

Lung cancer is a enormous global Public Health burden:

- According to the WHO, cancer is the second leading cause of death globally. In 2018, an estimated 9.6 million individuals died due to cancer. Lung cancer is the most common cause of cancer death leading to yearly 1.8 million deaths worldwide.
- A recent report by The Economist has analyzed national policies with regard to lung cancer. The report identified large room for improvement in all European countries, including Switzerland.

In Switzerland:

- The incidence of lung cancer is approximately 4'500 per year and with 3'200 deaths annually it is the leading cause of cancer mortality in Switzerland.
- The financial burden of lung cancer estimated to be yearly 721 Mio. Swiss Francs. According to this estimation, lung cancer is the most expensive cancer in Switzerland.

The high public health burden in combination with the increasing positive evidence of a lung cancer screening leads to national and international actions.

This project financed by the Swiss Lung League aims to:

- Assess the feasibility of introducing a national lung cancer screening program in Switzerland
- Describe the characteristics of such a LDCT lung cancer screening

Evidence for a LDCT Lung Cancer Screening

Large randomized controlled trials (e.g. Nelson or NLST) provide evidence that

- The number of lung cancers detected is significantly higher in the LDCT screening group than in the control group.
- LDCT screening increases the likelihood to detect lung cancer in the stages I and II compared to the control group.
- LDCT screening is associated with a decrease in lung cancer mortality.
- The cost per quality-adjusted life year (QALY) gained are likely to be less than Euro 50'000.
- Currently, a modelling study based on the data of the Nelson study is planned in collaboration with the University of Zurich.

Methodological approach

- Literature Review: Review of the most recent scientific literature, recommendations, position papers and grey literature
- Interviews with international experts and site visit: Eight interviews with international experts. Five of which were during a site visit in Manchester.
- Interviews with national stakeholders: 22 interviews with national experts were conducted in two stages. The first stage was conducted in autumn 2019 and the second stage in spring 2020.
- Workshops with stakeholders: Workshops were held with the CH-LSIG in fall 2019 and at the Swiss Public Health Conference 2020.

Potential patient pathway for a LDCT Lung Health Check

Invitation/Recruitment strategy

- GPs, pharmacists, leagues, etc. inform individuals about the LDCT screening
- Individuals within a certain age group are comprehensively invited to a pre-screening
- Further strategies might include health insurers or advertisements

Eligibility / inclusion criteria

- Individuals with a risk of at least 1.5% to suffer from lung cancer within the next 6 years are invited for LDCT screening
- The eligibility is assessed according to the PLCOm2012, which measures the risk based on several predictors and assessments such as smoking, age, spirometry, etc.

Risk Assessment/Pre-screening

- In a pre-screening an individual's risk to suffer from lung cancer is assessed
- The risk assessment can take place e.g., at the GP, in a mobile station (bus) or a hospital
- In the sense of a one-stop clinic, the pre-screening and the screening can take place during the same session

Informed Decision

- Information material is provided to the eligible individuals. It incorporates all necessary information to make an informed decision to participate or not in the screening
- Among others, Unisanté (Lausanne) is currently elaborating information material for a lung cancer screening
- Individuals participating the screening sign an informed consent

Smoking cessation program

- A smoking cessation program will be provided within the lung cancer screening
- Whether the participation in a smoking cessation session or abstinence from tobacco is an inclusion criterion for the screening needs to be defined.

LDCT Screening/Reading

- The actual LDCT screening can be offered on a bus, in a hospital or a radiological center
- Prerequisite for a institution to perform a screening is that pre-defined quality standards are met
- Screening and reading can be performed in two separate places
- In line with the newest scientific evidence, volumetry is applied
- Computer assisted diagnosis (CAD) can be applied for the reading
- In addition to the CAD reading is performed by one experienced radiologist or by two less experienced radiologists

Communication of results/coordination

- Indeterminate and positive findings are personally communicated by a professional (not written)
- Negative results are communicated in paper form
- The patient is coordinated, respectively re-invited by the program management
- For the efficient coordination, a data management system is necessary

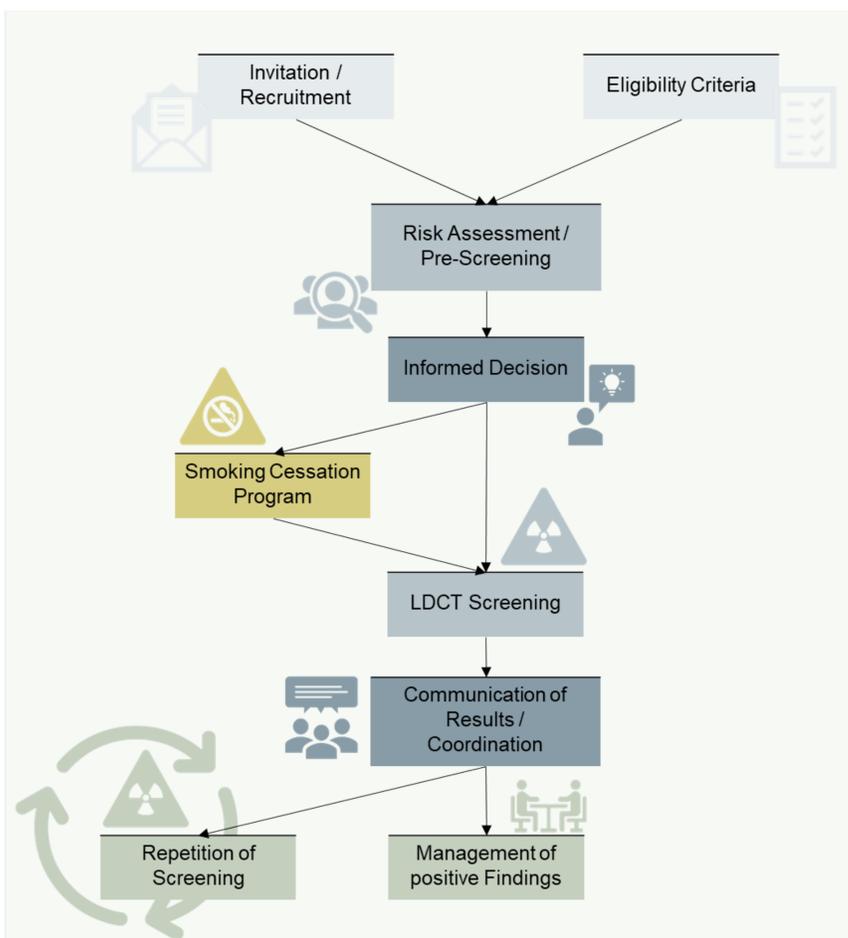
Management of abnormalities

- In case of indeterminate or positive findings, further diagnostics or treatments will be done within a hospital of choice

Repetition of Screenings

- In case of no indeterminate or positive findings, the LDCT screening is repeated yearly or bi-yearly

Patient pathway



Organization of the LDCT lung cancer screening

Quality assurance

- Educational courses are mandatory for radiologists.
- Screening centers must ensure quality standards. Such standards could involve a minimum number of readings and a composition of health professionals.
- Registry to follows the patients and allows for efficient patient administration is required. Swiss Cancer Screening has an information for mammography and colorectal screening, but it might not be adapted to include lung cancer screening.

Financing /reimbursement

- LDCT lung screening is currently not reimbursed by mandatory health insurance.
- Possibilities of financing a pilot study include leagues, foundations, Swiss National Science Foundation, tobacco prevention fund, cantons, industry partners, tobacco industry, out-of-pocket payments (50-100 francs).

Organization

- The framing of a Lung Health Check might be less stigmatizing and therefor preferred.
- A LDCT screening program can profit from the experiences of other cancer screenings.
- All concerned actors (e.g. GPs, radiologists, pneumologists, etc.) should to be included in the process of establishing a pilot to increase the acceptance.
- Mobile screening within a one-stop-clinic has advantages in terms of a higher take-up rate of eligible individuals. The acceptance of such an approach by the local actors is seen as crucial.